CONCISE COMMUNICATION

Pyosalpinx: not always a sexual transmitted disease? Pyosalpinx caused by *Plesiomonas shigelloides* in an immunocompetent host

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Plesiomonas shigelloides are ubiquitous Gram-negative bacteria that are found in fresh or marine water, particularly in tropical or warm climates; they were recently implicated in diarrhoeal disease. Patients usually present with a history of recent travel to tropical regions or consumption of uncooked seafood. Extraintestinal disease has rarely been reported, occurring generally in neonates or immunocompromised patients, and is often fatal. We report a case of right pyosalpinx due to *P. shigelloides* acquired by swimming in contaminated water. Laparoscopic salpingectomy led to a good outcome.

Keywords *Plesiomonas shigelloides*, pyosalpinx, immunocompetent

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INTRODUCTION

Plesiomonas shigelloides is a facultative anaerobic Gram-negative rod, that belongs to the Enterobacteriaceae family. Its natural reservoirs are fresh water or estuarine water and fish or seafood in temperate and tropical climates. The bacterium is commonly incriminated as a cause of diarrhoea. Extraintestinal infections, such as bacteremia, meningitis, cellulitis, osteomyelitis, cholecystitis, or peritonitis, are rare and have been mainly observed in immunocompromised hosts.

CASE REPORT

A 49-year-old woman presented with continuous right lower abdominal pain for 24 h. This increasing pain was not accompanied by nausea or vomiting, nor by diarrhoea or constipation. She denied any fever or urinary and gynecological symptoms. The patient worked as a nurse's aid in another hospital. Her past medical history only involved tube sterilization by cauterization 20 years ago. She was under estrogen–progesterone substitution for premenopausal menorrhagia and did not have any allergies. Three weeks prior to admission she had spent her holidays in the south of Spain, where she swam daily in a sea-water bay known for its warm water.

On admission, her temperature was 37.8 °C, and pulse, blood pressure and respiratory rate were normal. There was well-defined tenderness in the right lower quadrant, suggesting localized peritonitis.

The laboratory results showed an elevated white blood cell count of 16.9×10^9/L (normal value 4–10) and a C-reactive protein concentration of 81 mg/L (norm <5).

Without echography or computerized tomography (CT) acute appendicitis was suspected and explorative laparoscopy was performed on the same day. Intraoperative findings showed a normal appendix, a clear effusion in the pouch of Douglas and an inflamed and dilated right Fallopian tube, which was covered by fibrin. This inflammation spread from the isthmus of the uterus up to the cauterization scar (Figure 1). After mobilization, a right laparoscopic salpingectomy with an endo-stapler was performed. Samples of pus from the Fallopian tube were taken for microbiological investigation.

Intravenous amoxicillin-clavulanic acid and doxycycline were begun as empirical therapy.

Cultures and polymerase chain reaction (PCR, Amplicor-Roche Molecular System Inc., Pleasanton, CA, USA) on the pathological specimen were negative for *Chlamydia and Neisseria gonorrhoeae*, but positive for *Plesiomonas shigelloides*. *P. shigelloides* was not found in stool samples collected when the patient was already receiving antimicrobial therapy. The organism was sensitive to amoxicillin,

Figure 1 Right pyosalpinx covered by fibrin from the isthmus of the uterus up to the cauterization scar; i.e. in front Fallopian pavilion and right ovary are both normal.

so doxycycline was discontinued and oral amoxicillin-clavulanic acid was given for seven days. Histology confirmed the pyosalpinx. HIV serology was negative. Additionally there was negative serology for *Chlamydia trachomatis*.

Four days after surgery the patient left the hospital, without any complication.

DISCUSSION

P. shigelloides are facultative anaerobic Gram-negative rods, catalase and oxidase positive, presenting as flagellated motile bacteria. They were first described by Ferguson and Henderson in 1947 [1] and at least 107 different serotypes are now known. This ubiquitous organism is found in the surface of fresh water, occasionally in a marine environment, generally in tropical areas, but also in temperate climates, particularly in the warm season, although cases in cold water (in Sweden) have been described [2]. *P. shigelloides* has been isolated from a variety of sources, including wild and domestic (aquarium) animals such as fish, amphibians and shellfish. In Canada 71% of infected patients had a history of recent travel to Central America (45%), South-east Asia (45%), particularly Thailand, or Africa (10%); and 29% acquired the infection locally in association with the consumption of uncooked seafood or untreated water within the previous five days [3]. Foodhandlers and fishermen are at risk because of their profession.

Infection is characterized by small-volume diarrhoea (100%) with blood (27%) and mucus, abdominal spasms (78%), nausea or vomiting (50%), fever (30%), and transient arthralgia (11%) [3,4]. Symptoms usually occur within 48 h of exposure. More than half of the patients recover spontaneously within four weeks, but one-third may remain chronically symptomatic [3]. In Nigeria 8% of all patients with diarrhoea in rural areas have a stool specimen positive for *P. shigelloides* but only 2% in urban areas (compared with Japan, 0.01%); these numbers are independent of age or gender [5]. Exposure to *Plesiomonas shigelloides* (serotype 17) may immunize populations to *Shigella sonnei* because they share the same cell-wall lipospolysaccharide [6]. This is why these bacteria are named *shigelloides*.

Leucocytes (64%) and erythrocytes are often seen on stool smears. Sigmoidoscopy may show punctate lesions [4] or inflamed and fragile mucosa. Biopsies show a non-specific colitis [3].

Antimicrobial therapy significantly reduces the period of diarrhoea. In vitro experience shows sensitivity to many antibiotics, though there can be resistance to penicillin, probably due to production of β-lactamase [7].

Extraintestinal disease is rare, but some cases of cholecystitis, peritonitis and pancreatic abscess, presumably by intestino-portal entry, have been described.

Extra-abdominal disease such as septicemia, meningitis or meningoencephalitis, pleuritis, osteomyelitis, or septic arthritis are very rare. They generally occur in immunocompromised patients such as neonates or patients with neutropenia, cirrhosis, lymphoma or solid cancer, inflammatory disease, HIV infection or following splenectomy. These haematogenous infections are often fatal. Twentyone pediatric patients with *P. shigelloides* septicemia have been reported in the literature with a mortality rate as high as 62%, despite proper identification of the organism and adequate antibiotic therapy [8].

Two cases of cellulitis after direct contact with contaminated fish [2,9] and endophthalmitis after injury by fishhook have also been reported [10].

Even congenital endophthalmitis, probably via the transplacental route after eating shellfish, has been reported [11].

Except for direct infection through contaminated fish and polymicrobial infection, only two cases of extra-abdominal infection in apparently immunocompetent adult hosts have been reported: fatal septicemia after proctitis in a HIV-negative patient [12] and sepsis with osteomyelitis after gastoenteritis. The latter was the only one of 11 patients to survive septicemia, whereas the patients who died all had immunocompromising diseases [13].

To the best of our knowledge this is the first description of pyosalpinx caused by *P. shigelloides*, which has never before been isolated from the genital tract. Our patient had no history of cancer or chemotherapy, hemopathology or immunological impairment, nor cirrhosis, and had negative HIV serology. Our patient was married and denied promiscuity; therefore this enteric organism was probably not transmitted by sexual contact. This extraportal infection does not seem to be secondary to a hematogenous spread from the gut, but rather to a direct ascending infection of the Fallopian tube up to the cauterization scar, acquired during swimming in contaminated temperate estuarine water. Acute diarrhoea with abdominal pain caused by *P. shigelloides* after swimming in a river has been reported once [14]. Our patient had an uneventful course with short hospital stay after laparoscopic right salpingectomy and received antibiotics for seven days.

It seems that this organism has low pathogenicity in immunocompetent patients and that the outcome depends mainly on the immune status.

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